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EXAMINER

CURTIS, CRAIG

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2872

DATE MAILED: 12/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/081,078

Applicant(s)

NORTON, ADAM E.

Examiner

Craig H. Curtis

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 29 September 2003.

2a) ☐ This action is **FINAL**.

2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☐ Claim(s) 1-32 is/are pending in the application.

4a) Of the above claim(s) 1-22 and 32 is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☐ Claim(s) 23-31 is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some * c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No. 76/5/02
4/18/03

4) ☐ Interview Summary (PTO-413) Paper No(s). _____

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____

DETAILED ACTION

Disposition of the Instant Application

- This Office action is responsive to Applicants' Reply to Restriction Requirement received on 29 September 2003.
- In said Reply, Applicants elected to prosecute Group II, claims 23-31, drawn to a depolarizer, without traverse. Thus, in accordance with 37 CFR 1.142(b), claims 1-22 and 32, associated with Group I, drawn to a spectrometry instrument, are withdrawn from further consideration by the Examiner as being drawn to a non-elected invention. The Restriction Requirement, having remained proper, is hereby made **FINAL**.

Claim Objections

1. Claims 25 & 31 are objected to because of the following informalities:

With regard to claim 25, although it is appreciated that each of said plates has but one ordinary axis, and that Applicants' use of the pronoun *their* can properly be interpreted as being singular, the recitation "...where all the plates have substantially different rotation angles of their ordinary axis... (emphasis added)" is inconsistent in a grammatical sense. More specifically, it is believed that Applicants intended to convey wherein the ordinary axis of each plate is rotated substantially differently from the ordinary axes of each additional plate. As presently recited, however, the plural noun *plates* must--in the interest of avoiding mixed-number grammatical disagreement--be associated with the plural noun phrase *ordinary axes* or be changed to the singular noun *plate* (which would agree in number with the presently noun phrase *optical axis*).

With regard to claim 31, the limitation "...and where all the plates have substantially different rotation angles of their ordinary axis...." raises identical issues as those addressed *supra* with regard to claim 25. **APPROPRIATE CORRECTION IS REQUIRED.**

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 27, 28, and 31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicants regard as the invention.

With regard to claim 27, the limitation "...where the thicknesses of the of the plate are in some permutation of the ratios of 1:3:9...." (recited in lines 1-3 of this claim) is indefinite in that it is unclear how broadly this limitation is to be interpreted. For instance, would this limitation only encompass the ratios 1:3:9, 3:9:1, and 9:3:1? Or is said limitation to be taken to encompass a thickness ratio such as, for the sake of example, 3:1:9? And more importantly, is it Applicants' contention that said depolarizer would function as intended if, for example, said plates were to be arranged in order of thickness as 3:9:1? It does not appear that such ordering of said plates (as well as other orderings) is supported by the specification.

With regard to claim 28, the limitation "...where the thicknesses of the of the plate are in some permutation of the ratios of 3:4:9...." (recited in lines 1-3 of this claim) raises the same indefiniteness issues addressed *supra* with regard to claim 27.

With regard to claim 31, proper antecedent support has not been provided for the limitation "...the fundamental retardance frequency."

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 23, 24, and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Title (US Pat. No. 4,129,357).

With regard to claim 23, Title discloses the invention as claimed—[a] depolarizer (viz., cascaded modules 31 & 32 in Fig. 2) with more than two birefringent plates (viz., plates 33, 34, 35, and 36 depicted in Fig. 2; also see column 5, lines 29-34).

With regard to claim 24, Title further discloses wherein all said plates have substantially different thicknesses. See column 5, lines 47-52.

With regard to claim 26, Title still further discloses wherein said depolarizer has three plates (interpreting the recited *with* as being a transitional of the open-ended variety).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 25, 27, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Title (US Pat. No. 4,129,357).

With regard to claim 25, Title discloses the claimed invention as set forth *supra* **EXCEPT FOR** an explicit teaching where all the plates have substantially different rotation angles of their ordinary axis [sic]. It is noted, to the extent that Title can be viewed as not explicitly disclosing this teaching, that various of the ordinary axis (read: ordinary axes) of the plates disclosed by Title are in fact taught as having substantially different rotation angles (especially if one takes into account additionally disclosed birefringent plates (e.g., 42, 47, 52, and 54). See, for instance, col. 5, ll. 41-46. In any event, the Examiner hereby takes Official Notice of the fact that the practice of the rotation of a series of birefringent plates such that the ordinary axes of said plates have substantially different rotation angles is notoriously old and well-known in the polarization art. This being the case, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have oriented all the plates such that they have substantially different rotation angles of their ordinary axis (read: ordinary axes) for at least the purposes of achieving a desired polarization discrimination.

With regard to claim 27 & 28, Title discloses the claimed invention as set forth *supra* **EXCEPT FOR** an explicit teaching wherein the thicknesses of the plates are in some permutation of the ratios 1:3:9 & 3:4:9, respectively.

Title does however explicitly disclose wherein said the thicknesses of said plates are in the ratio of 1:2:3:6. See column 5, lines 47-52. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have arranged the thicknesses of said plates disclosed by Title such that they be in some permutation of the recited ratios, for at least the purpose of minimizing various maxima of certain orders, since it has been held that wherein the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Moreover, criticality as to thickness order cannot be presumed if various permutations of thicknesses result in a depolarizer that functions identically to that having a different permutation, arrangement, of thicknesses.

5. Claims 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Title (US Pat. No. 4,129,357) in view of Yeh et al. (US Pat. No. 4,269,481).

With regard to claims 29 and 30, Title discloses the claimed invention as set forth *supra* **EXCEPT FOR** explicit teachings (respectively) of the following: where the angle

between two of the plates is substantially $n \frac{\pi}{2} \pm \arccos\left(-\frac{1}{3}\right) / 4$, where n is an integer; and

where the angle between two of the plates is substantially $\left(n + \frac{1}{2}\right) \frac{\pi}{2}$, where n is an integer.

Yeh et al., however, disclose an electro-optic tunable filter having electro-optical (read: *birefringent*) plates (see, e.g., Figs. 5 & 10), tuning requirements of said electro-optic tunable filter being disclosed in column 5, lines 46 through column 6 (it being noted that inserting $n=1$ into each of the above-recited angle relationships yields angles of $\sim 117.37^\circ$ (~ 2.05 radians) & 135° (~ 2.36 radians), respectively. And since the relative orientation (viz., angle) between two of said plates influences the retardance (viz., a change in phase) of a beam of light passing through said filter, a teaching expressly disclosed by the tunable nature of the filter taught by Yeh et al., it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the filter of Title such that the angle between two of its plates be tunable—again, as explicitly taught by Yeh et al.—for at least the purpose of permitting fine tuning of polarization state of light passing through said filter.

With regard to claim 31, it is noted as being at least implicit, if not explicit, that the thicknesses of the plates of the combination are selected such that the fundamental frequency is not significantly detectable.

Contact Information

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig Curtis, whose telephone number is (703) 305-0776. The centralized facsimile phone number for the USPTO is (703) 872-9306.

Any inquiry of a general nature regarding to the status of this application should be directed to the Group receptionist, whose telephone number is (703) 308-0956.

A handwritten signature in black ink, appearing to read 'Audrey Chang', with a large, sweeping initial 'A'.

Audrey Chang
Primary Examiner
Technology Center 2800

C.H.C.

Craig H. Curtis
Group Art Unit 2872
10 December 2003